We claim:

1. Repulpable pressure-sensitive adhesive comprising at least one polyacrylate-based block copolymer.

2. Repulpable pressure-sensitive adhesive according to Claim 1, wherein the block copolymer comprises a sequence of hard polymer blocks [P(A)] having a softening/glass transition temperature of not less than 20°C and having at least one polar unit and of soft polymer blocks [P(B)] having a softening/glass transition temperature of not more than 0°C.

3. Repulpable pressure-sensitive adhesive according to Claim 1, wherein the block copolymer has a triblock structure P(A)-P(B)-P(A) and/or P(B)-P(A)-P(B) where P(A) is a hard polymer block having a softening/glass transition temperature of not less than 20°C and at least one polar unit and P(B) is a soft polymer block having a softening/glass transition temperature of not more than 0°C.

4. Repulpable pressure-sensitive adhesive according to Claim 1, wherein the block copolymer comprises a sequence of hard polymer blocks [P(A)] having a softening/glass transition temperature of not less than 20°C and having at least one polar unit and of soft polymer blocks [P(B)] having a softening/glass transition temperature of not more than 0°C and the block copolymer in the polymer blocks P(A) and/or P(B) comprises at least one comonomer having at least one functional group which is inert in a free-radical polymerization reaction and which is able to promote a crosslinking reaction of the block copolymers and/or raises the softening/glass transition temperature.

5. Repulpable pressure-sensitive adhesive according to Claim 1, wherein the block copolymer has a P(A)-P(B/D)-P(A) structure, where

   P(B/D) represents a copolymer block of the monomers B and D and possesses a softening/glass transition temperature of from –80°C to 0°C, component D possessing at least one functional group which is inert in a free-radical polymerization reaction and serves to increase the cohesion of the block copolymer;

P(A) represents a polymer block of the monomers A and possesses a softening/glass transition temperature of from 20°C to 175°C and bears at least one polar unit; and

the polymer block P(A) is insoluble in the copolymer block P(B/D) and the polymer block P(A) and the copolymer block P(B/D) are immiscible.

6. Repulpable pressure-sensitive adhesive according to Claim 5, wherein the fraction of the polymer blocks P(A) in the block copolymer is from 10 to 60% by weight.

7. Repulpable pressure-sensitive adhesive according to Claim 5, wherein the fraction of component D in the copolymer block P(B/D) is from 0.5 to 30% by weight.

8. Repulpable pressure-sensitive adhesive according to Claim 1, wherein the block copolymer has a P(B)-P(A)-P(B) or P(B/D)-P(A)-P(B/D) structure, where

P(B) represents a polymer block of the monomers B and possesses a softening/glass transition temperature of not more than 0°C;

P(B/D) represents a copolymer block of the monomers B and D and possesses a softening/glass transition temperature of not more than 0°C, component D possessing at least one functional group which is inert in a free-radical polymerization reaction and which serves to increase the cohesion of the block copolymer;

P(A) represents a polymer block of the monomers A and possesses a softening/glass transition temperature of not less than 20°C and bears at least one polar unit; and

the polymer block P(A) is insoluble in the polymer block P(B) or in the copolymer block P(B/D) and the polymer block P(B) and also the copolymer block P(B/D) and P(A) are immiscible.

9. Repulpable pressure-sensitive adhesive according to Claim 8, wherein the fraction of the polymer blocks P(A) in the block copolymer is from 30 to 70% by weight.

10. Repulpable pressure-sensitive adhesive according to Claim 8, wherein the fraction of component D in the copolymer block P(B/D) is from 0.5 to 30% by weight.

11. Repulpable pressure-sensitive adhesive according to Claim 1, wherein the block copolymer has a P(A/C)-P(B)-P(A/C) structure, where

P(B) represents a polymer block of the monomers B and possesses a softening/glass transition temperature of from –80°C to 0°C;

P(A/C) represents a polymer of at least two monomers A and C and possesses a softening/glass transition temperature of from 20°C to 175°C, component C being selected from the group of monomers which as homopolymers have a softening/glass transition temperature of greater than 60°C or are capable of UV crosslinking; and

the polymer block P(B) is insoluble in the copolymer block P(A/C) and the polymer block P(B) and the copolymer block P(A/C) are immiscible.

12. Repulpable pressure-sensitive adhesive according to Claim 11, wherein the fraction of the copolymer blocks P(A/C) in the block copolymer is from 30 to 65% by weight.

13. Repulpable pressure-sensitive adhesive according to Claim 11, wherein the fraction of component C in the copolymer block P(A/C) is from 0.5 to 30% by weight.

14. Repulpable pressure-sensitive adhesive according to Claim 1, wherein the block copolymer has a $[P(A)-P(B)]_nX$ structure or a $[P(A)-P(B)]_nX[P(B)]_m$ structure, where

n is an integer from 3 to 12, m is an integer from 3 to 12 and X represents a polyfunctional branching region;

P(A) represents a polymer block of the monomers A and possesses a softening/glass transition temperature in the range from 20°C to 175°C and bears at least one polar unit; and

P(B) represents a polymer block of the monomers B and has a softening/glass transition temperature in the range from -80°C to 0°C.

15. Repulpable pressure-sensitive adhesive tape comprising a backing material, wherein at least one side of the backing material is provided with a pressure-sensitive adhesive according to any one of the preceding claims.

16. A method of splicing papers, which comprises splicing said papers with a repulpable pressure-sensitive adhesive tape of Claim 15.